

II. REMARKS/ARGUMENTS

A. General

The application still contains 45 claims.

Claim 3 has been amended in order to better define the subject matter being claimed. No new matter has been added to the claims under the current amendment.

Claims 2 and 4-46 remain the same.

B. Summary of Rejection under 35 USC §102(a) and Response

In the Office Action, the Examiner has rejected claims 1-6, 28-37 and 42-45 under 35 USC §102(a) as being anticipated by U.S. Patent 6,741,552 (hereafter to be referred to as McCrosky et al.) The Applicant assumes that it was the Examiner's intention to reject claims 2-6, instead of claims 1-6, given that claim 1 was cancelled in the Applicant's previous response dated April 19, 2005.

For the reasons presented below, the Applicant respectfully traverses the Examiner's rejection, and submits that claims 2-6, 28-37 and 42-45 are in allowable form.

Claim 2-6, 28-37 and 42-45

The Examiner's attention is respectfully directed towards the following limitations of independent claim 3:

- A switch fabric implemented on a chip comprising:
a) an array of cells; and

- b) an I/O interface in communication with said array of cells permitting exchange of data packets between said array of cells and components external to said array of cells;
- c) **each cell of said array including:**
 - I) a memory for holding a plurality of data packets for transmission to other cells of said array, each data packet of the plurality of data packets having a characteristic element represented by a parameter, the parameter allowing to distinguish one data packet from another data packet in the plurality of data packets;
 - II) a control entity operative to:
 - (i) select at least one data packet from the plurality of data packets at least in part on a basis of the parameter; and
 - (ii) transmit the selected data packet to another cell of said array of cells;
 - III) **a transmitter in communication with said I/O interface and in communication with every other cell of said array**, said transmitter operative to process a data packet received from said I/O interface to determine a destination of the data packet and forward the data packet to at least one cell of said array selected on a basis of the determined destination;
 - IV) **a set of receivers, wherein for each said other cell of said array, a respective receiver from said set of receivers is associated with said other cell**, the respective receiver being in communication with said other cell allowing said other cell to forward data packets to the respective receiver; the receivers being in communication with said I/O interface for releasing data packets to said I/O interface..

The Applicant respectfully submits that McCrosky et al. does not disclose, teach or suggest the above-emphasized limitations of independent claim 3. More specifically, McCrosky et al. does not disclose "each cell of said array including...a set of receivers, wherein for each said other cell of said array, a respective receiver from said set of receivers is associated with said other cell".

As was stated in the Applicant's previous response, McCrosky et al. is directed to a cell switching architecture based on a network of switching elements connected in the manner of a "hypercube" to form a switch fabric. McCrosky's packets do not travel directly from source-to-destination in a hopless fashion. Instead they undergo a number of intermediate hops.

On page 2 of the Office Action, the Examiner states that "the argument that the invention of McCrosky et al. does not have the packets travel in a hopless fashion is not relevant to the claim language". In response to the Examiner's statement, the Applicant respectfully submits that the mention of the term "hopless" was merely to illustrate the difference between the present invention

and the teachings of McCrosky et al. Specifically, McCrosky et al. teaches neighbor-only interconnections, wherein each cell only has a receiver for each neighbor cell. This structure necessitates hop-y-hop routing, wherein packets are affixed with a header that guides them from cell to cell until they reach their destination (see col. 7, lines 62-65 and col. 8 lines 10-11).

In contrast to this, independent claim 1 recites "a set of receivers, wherein for each said other cell of said array, a respective receiver from said set of receivers is associated with said other cell" [emphasis added]. It should be appreciated that this structure allows direct source-to-destination travel with no intermediate hops. More specifically, by having a separate receiver for *each* other cell in the array, the need for a header to guide the packets is eliminated since the packet is placed in a link that leads only to one cell. The Applicant respectfully submits that the cells of McCrosky's Hypercube do not have a receiver for each other cell, but merely for the closest neighbor cells, which as described above, necessitates hop-y-hop routing. Given the McCrosky et al. does not have a receiver for each other cell, McCrosky et al. does not teach the above emphasized limitation of independent claim 3.

As per §2131 of the MPEP, in order "to anticipate a claim, the reference must teach every element of the claim". Since McCrosky et al. does not teach the limitation of "a set of receivers, wherein for each said other cell of said array, a respective receiver from said set of receivers is associated with said other cell", McCrosky et al. does not support a rejection based on anticipation.

The Applicant therefore respectfully submits that claim 3 is in allowable form, and respectfully requests that the Examiner withdraw her rejection of independent claim 3.

Claim 2, 4-6, 28-37 and 42-45 depend from independent claim 3 and, as such, incorporate by reference all the claim limitations contained therein, including the following limitation which has been shown to be absent from McCrosky et al.:

a set of receivers, wherein for each said other cell of said array, a respective receiver from said set of receivers is associated with said other cell,

Accordingly, claims 2, 4-6, 28-37 and 42-45 are now believed to be in condition for allowance as being dependent upon an allowable base claim. The Examiner is respectfully requested to withdraw her rejection to dependent claims 2, 4-6, 28-37 and 42-45.

Notwithstanding the above, the Applicant further submits that McCrosky et al. does not disclose the following limitation of dependent claim 4.

"the data channel associated with said given cell connecting the transmitter of said given cell to the receivers in cells other than said given cell....".

As clearly shown in Figure 1 of McCrosky et al., each of McCrosky's nodes (cells in the terminology of the present application) SE 000 - SE 111 has a plurality of data channels, each of which connects to exactly one other node. Thus McCrosky et al. clearly teaches each node having multiple data channels each of which connects to a receiver in exactly one other node/cell.

In sharp contrast to this, claim 4 of the present application recites "the data channel associated with said given cell connecting the transmitter of said given cell to the receivers in cells other than said given cell....". In other words, while each McCrosky node has multiple channels each to one other node, each cell (node) in claim 4 of the present invention has one channel to multiple other cells (node).

As such, in addition to being dependent on allowable claim 3, claim 4 further recites at least one additional limitation that is not taught by McCrosky et al.

Accordingly, the Examiner is respectfully requested to withdraw her rejection to dependent claim 4.

C. Summary of Rejection under 35 USC §103(a) and Response

Claims 7-11

In the Office Action, the Examiner has rejected claims 7-11 under 35 U.S.C. §103(a) as being unpatentable over McCrosky et al. in view of U.S. Patent 6,674,971 (hereafter to be referred to as Boggess et al.).

The Applicant notes that the Examiner made the same rejection in the previous Office Action dated November 19, 2004. In the Applicant's response dated April 19, 2005, the Applicant set forth arguments against this rejection firstly on the basis that neither McCrosky et al. nor Boggess et al. taught certain limitations of these claims, and secondly on the basis that a person skilled in the art would not be motivated to combine the teachings of McCrosky et al. with those of Boggess et al. On page 2 of the present Office Action, the Examiner addresses the arguments relating to the lack of motivation to combine these references, but does not address the Applicant's previously presented arguments regarding the fact that neither McCrosky et al., nor Boggess et al. teach certain limitations of independent claim 3.

Accordingly, the Applicant has respectfully reproduced the previously presented arguments herein below. If the Examiner continues to disagree with these arguments, the Applicant respectfully requests that the Examiner indicate where in either McCrosky et al. or Boggess et al., the limitation identified below is taught.

Claims 7-11 depend from independent claim 3 and as such incorporate by reference all the limitations contained therein, including the following limitation which has already been shown to be absent from McCrosky et al.

a set of receivers, wherein for each said other cell of said array, a respective receiver from said set of receivers is associated with said other cell, the respective receiver being in communication with said other cell allowing said other cell to forward data packets to the respective receiver; the receivers being in communication with said I/O interface for releasing data packets to said I/O interface.

It is further submitted that the above limitation is also absent from Boggess et al. More specifically, Boggess et al. is directed to an optical communication network with receiver-reserved channels. Transmission on any particular receiver-reserved channel results in data being sent to a predetermined node having that particular receiver-reserved channel. When the data passes through nodes other than the predetermined node, it is passed by those other nodes without pausing to check the address information in the header (see Abstract of Boggess).

Looking more closely at Boggess et al. (see Fig. 7B, for example), for a given node (say node 350), only one receiver (the top one) is susceptible of receiving data destined for node 350 along the receiver-reserved channel for that node (channel 316). Thus, it would be false to contend that for each of the other nodes, node 350 includes a respective receiver associated with those other nodes.

Moreover, the origin of the data received along channel 316 is variable, i.e. it may have been placed onto channel 316 (or 314 or 312 or 310) by any of the other nodes. Thus, for the one receiver that truly does carry data to node 350, it cannot be said that this receiver is associated with *one* of the other nodes 360, 370, 380.

In light of the above, the Applicant respectfully submits that Boggess does not disclose the above emphasized limitation of independent claim 3. As per § 2143.03 of the *Manual of Patent Examining Procedure*, in order to establish a *prima facie* case of obviousness, the combined prior art references must teach or suggest all of the claim limitations. Since it has been shown that neither McCrosky et al. nor Boggess et al. teach the above limitation of independent claim 3 from which claims 7-11 depend, the Applicant respectfully submits that the combination of these references is not sufficient for establishing a *prima facie* case of obviousness. Accordingly, the Examiner is respectfully requested to withdraw her rejection of claims 7-11.

Claims 12-15

In the Office Action, the Examiner has rejected claims 12-15 under 35 U.S.C. §103(a) as being unpatentable over McCrosky et al. in view of Boggess in further view of U.S. Patent 5,898,688 (hereafter to be referred to as Norton et al.).

For the reasons presented below, the Applicant respectfully traverses this rejection and submits that claims 12-15 are in allowable form, as they currently stand.

More specifically, claims 12-15 depend from independent claim 3 and therefore incorporate by reference all the limitations contained therein, including the following limitation which has already been shown to be absent from McCrosky et al. and Boggess et al.

a set of receivers, wherein for each said other cell of said array, a respective receiver from said set of receivers is associated with said other cell, the respective receiver being in communication with said other cell allowing said other cell to forward data packets to the respective receiver; the receivers being in communication with said I/O interface for releasing data packets to said I/O interface.

The Applicant further submits that this limitation is also absent from Norton et al. Norton et al. relates to a network switch that includes a plurality of cell processing units coupled together via a switch bus. Nowhere does Norton et al. describe anything relating to a cell in an array that includes "a set of receivers, wherein *for each said other cell of said array, a respective receiver from said set of receivers is associated with said other cell*". [emphasis added]

Accordingly, since neither McCrosky et al., Boggess et al. nor Norton et al. teach the above limitation of independent claim 3, and since claims 12-15 depends from independent claim 3, the Applicant respectfully submits that the references cited by the Examiner do not support a prima facie case of obviousness, as per § 2143.03 of the MPEP. Accordingly, the Examiner is respectfully requested to withdraw her rejection of claims 12-15 under 35 U.S.C. §103(a).

Claims 16-17

In the Office Action, the Examiner has rejected claims 16-17 under 35 U.S.C. §103(a) as being unpatentable over McCrosky et al. in view of Boggess et al. in further view of U.S. Patent 6,614,796 (hereafter to be referred to as Black et al).

For the reasons presented below, the Applicant respectfully traverses this rejection and submits that claims 16-17 are in allowable form, as they currently stand.

More specifically, claims 16-17 depend from independent claim 3 and therefore incorporate by reference all the limitations contained therein, including the following limitation which has already been shown to be absent from McCrosky et al. and Boggess et al.

a set of receivers, wherein for each said other cell of said array, a respective receiver from said set of receivers is associated with said other cell, the

respective receiver being in communication with said other cell allowing said other cell to forward data packets to the respective receiver; the receivers being in communication with said I/O interface for releasing data packets to said I/O interface.

The Applicant further submits that this limitation is also absent from Black et al. On pages 2-3 of the Office Action, the Examiner states that “the invention of Black does disclose a dedicated back channel, which is used for information that does not need to be responded to”. The Applicant respectfully disagrees with the Examiner, and submits that nowhere does Black et al. disclose a dedicated back channel.

On page 12 of the Office Action, the Examiner states that “Black discloses in col.10, lines 40-45 using a back channel to communicate information between nodes that only need to send information in one direction”. As argued in the Applicant’s previous response dated April 19, 2005, the portion of Black et al. referred to by the Examiner does not teach a dedicated back channel. Instead, Black et al. simply discloses relaying control information from a receiving node through a third node to use that third node’s underutilized data channel towards a transmitting node. This specifically avoids requiring a dedicated back channel.

Given that Black et al. does not disclose a dedicated back channel, the Applicant respectfully submits that Black et al. does not disclose a cell in a switch fabric that is provided with a “set of receivers, wherein for each said other cell of said array, a respective receiver from said set of receivers is associated with said other cell”.

If the Examiner continues to find the Applicant’s arguments unconvincing, the Examiner is respectfully invited to where Black et al. discloses a dedicated back channel. Until then, the Applicant respectfully submits that neither McCrosky et al., Boggess et al. nor Black et al teach the above limitation of independent claim 3. Since claims 16-17 depends from dependent claim 3, the references cited by

the Examiner do not support a prima facie case of obviousness, as per § 2143.03 of the MPEP. Accordingly, the Examiner is respectfully requested to withdraw her rejection of claims 16-17 under 35 U.S.C. §103(a).

Claims 18-27 and 46

In the Office Action, the Examiner has rejected claims 18-27 and 46 under 35 U.S.C. §103(a) as being unpatentable over McCrosky et al. in view of Boggess et al. in view of Black et al. in further view of U.S. Patent 5,430,715 (hereafter to be referred to as Corbalis et al).

For the reasons presented below, the Applicant respectfully traverses this rejection and submits that claims 18-27 and 46 are in allowable form, as they currently stand.

More specifically, claims 18-27 and 46 depend from independent claim 3 and therefore incorporate by reference all the limitations contained therein, including the following limitation which has already been shown to be absent from McCrosky et al., Boggess et al. and Black et al.

a set of receivers, wherein for each said other cell of said array, a respective receiver from said set of receivers is associated with said other cell, the respective receiver being in communication with said other cell allowing said other cell to forward data packets to the respective receiver; the receivers being in communication with said I/O interface for releasing data packets to said I/O interface.

The Applicant further submits that this limitation is also absent from Corbalis et al. As stated in the Applicant's previous response dated April 19, 2005, Corbalis et al. is directed to a mechanism for routing a communication cell in a cell switching communication controller. Corbalis et al. describes communication modules 50-53 that exchange cells by transferring frames over a set of cell exchange lines 62. The cell exchange lines 62 comprise multiple pairs of transmit

and receive data lines, such that when frames get sent over the exchange lines 62, there is one sender and all receivers get the same data. This is in contrast to the present invention, in which a given cell of an array includes a respective receiver for each of the other cells in the array, such that when data is transferred between cells, there is one sender, and one receiver.

Since neither McCrosky et al., Boggess et al., Black et al. nor Corbalis et al. teach the above limitation of independent claim 3, and since claims 18-27 and 46 depend from claim 3, the Applicant respectfully submits that the references cited by the Examiner do not support a prima facie case of obviousness, as per § 2143.03 of the MPEP. Accordingly, the Examiner is respectfully requested to withdraw her rejection of claims 18-27 and 46 under 35 U.S.C. §103(a).

Claims 38-39

In the Office Action, the Examiner has rejected claims 38-39 under 35 U.S.C. §103(a) as being unpatentable over McCrosky et al. in view of U.S. Patent 6,064,677 (hereafter to be referred to as Kappler et al).

For the reasons presented below, the Applicant respectfully traverses this rejection and submits that claims 38-39 are in allowable form, as they currently stand.

More specifically, claims 38-39 depend from independent claim 3 and therefore incorporate by reference all the limitations contained therein, including the following limitation which has already been shown to be absent from McCrosky et al.

a set of receivers, wherein for each said other cell of said array, a respective receiver from said set of receivers is associated with said other cell, the respective receiver being in communication with said other cell allowing said

other cell to forward data packets to the respective receiver; the receivers being in communication with said I/O interface for releasing data packets to said I/O interface.

The Applicant further submits that this limitation is also absent from Kappler et al. For the same reasons as those presented in the Applicant's previous response dated April 19, 2005, the Applicant respectfully submits that Kappler et al. does not disclose, teach or suggest the above-emphasized limitations of independent claim 3. Instead, Kappler et al. relates to multiple rate sensitive priority queues, and provides only a peripheral description of switch fabrics and switch fabric cells. As such, there is not sufficient description in Kappler et al. relating to switch fabrics to disclose the above-emphasized limitation of independent claim 3.

Since neither McCrosky et al. nor Kappler et al. teach the above limitation of independent claim 3, and since claims 38-39 depend from claim 3, the Applicant respectfully submits that the references cited by the Examiner do not support a prima facie case of obviousness, as per § 2143.03 of the MPEP. Accordingly, the Examiner is respectfully requested to withdraw her rejection of claims 38-39 under 35 U.S.C. §103(a).

Claims 40-41

In the Office Action, the Examiner has rejected claims 40-41 under 35 U.S.C. §103(a) as being unpatentable over McCrosky et al.

For the reasons presented below, the Applicant respectfully traverses this rejection and submits that claims 40-41 are in allowable form, as they currently stand.

More specifically, claims 40-41 depend from independent claim 3 and therefore incorporate by reference all the limitations contained therein, including the

following limitation which has already been shown to be absent from McCrosky et al.

a set of receivers, wherein for each said other cell of said array, a respective receiver from said set of receivers is associated with said other cell, the respective receiver being in communication with said other cell allowing said other cell to forward data packets to the respective receiver; the receivers being in communication with said I/O interface for releasing data packets to said I/O interface.

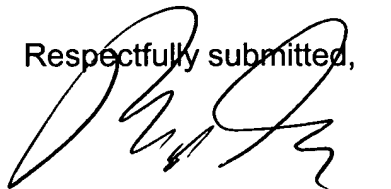
Since McCrosky et al. does not teach the above limitation of independent claim 3, and since claims 40-41 depend from independent claim 3, the Applicant respectfully submits that the reference cited by the Examiner does not support a prima facie case of obviousness, as per § 2143.03 of the MPEP. Accordingly, the Examiner is respectfully requested to withdraw her rejection of claims 40-41 under 35 U.S.C. §103(a).

V. CONCLUSION

In view of the above, it is respectfully submitted that claims 2-46 are in condition for allowance. Reconsideration of the rejections and objections is requested. Allowance of claims 2-46 at an early date is solicited.

If the claims of the application are not considered to be in full condition for allowance, for any reason, the Applicant respectfully requests the constructive assistance and suggestions of the Examiner in drafting one or more acceptable claims or in making constructive suggestions so that the application can be placed in allowable condition as soon as possible and without the need for further proceedings.

Respectfully submitted,



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